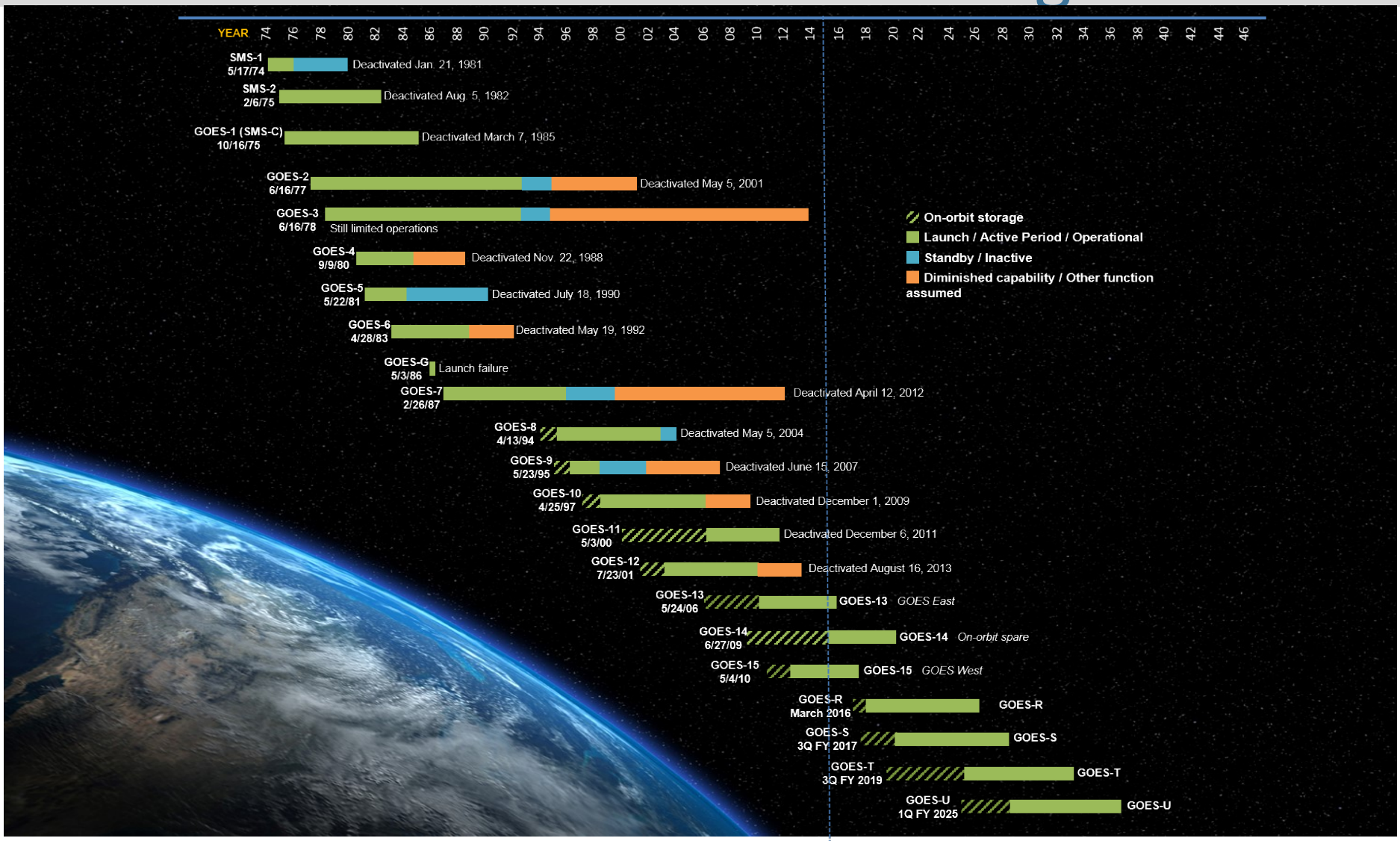
An Overview of the GOES-R Series Program

Mike Stringer, GOES-R Assistant System Program Director

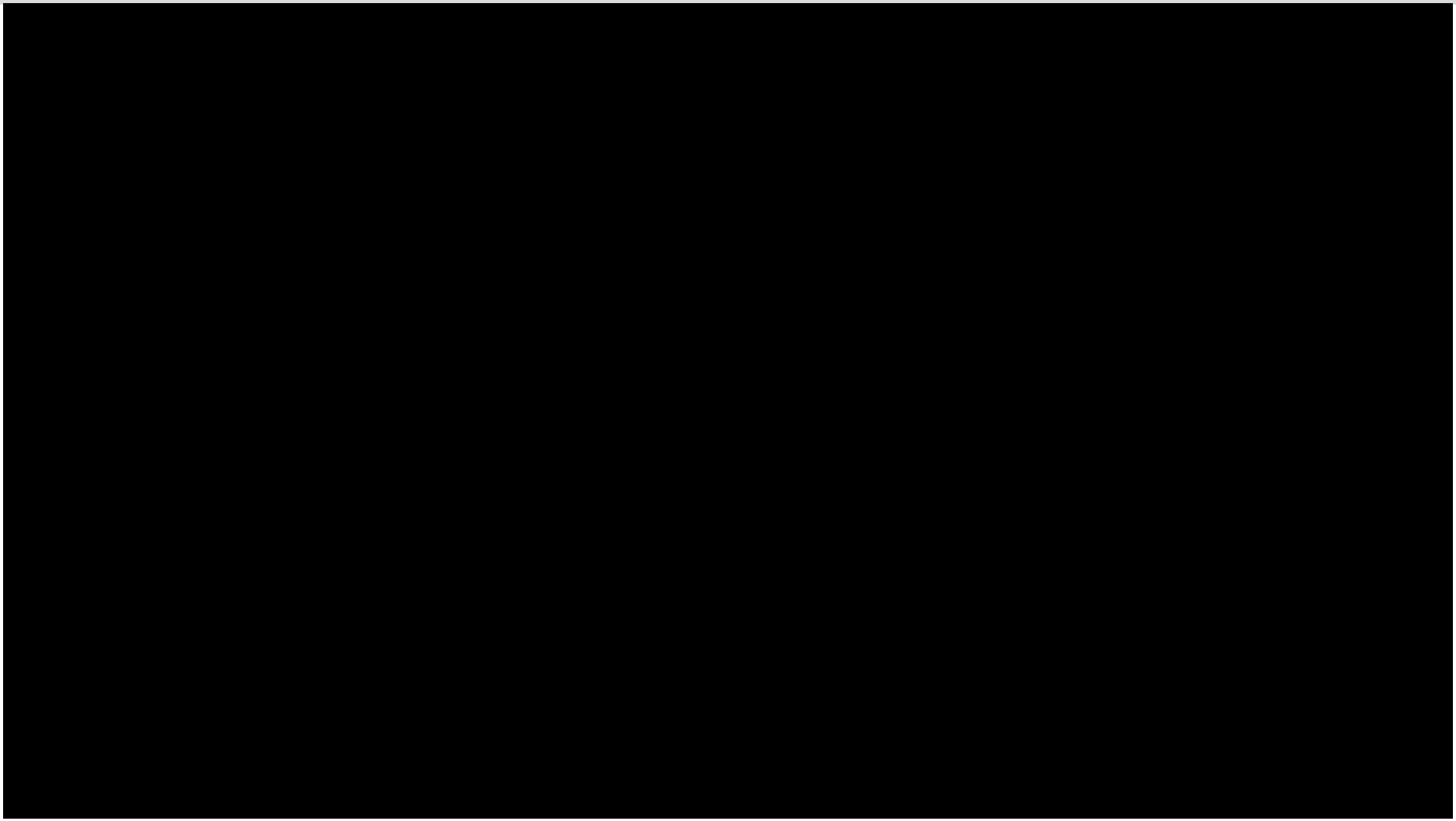
AMS 95th Annual Meeting and 11th Annual Symposium on Future National Operational Environmental Satellite Systems

January 6, 2015

Continuity of Geostationary Environmental Satellite Programs



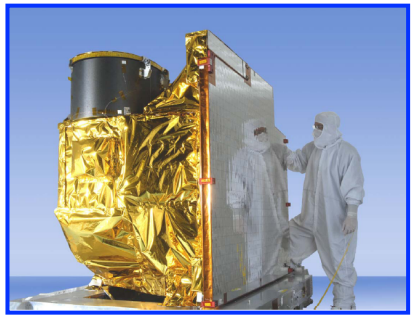
How to Build a GOES-R Satellite



GOES-R Instruments

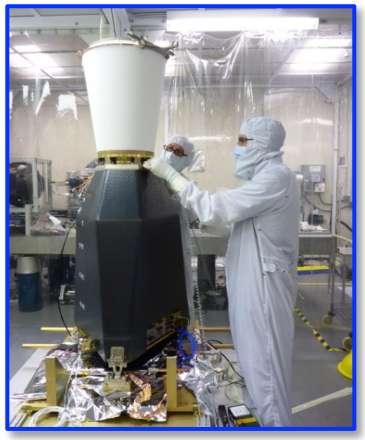
Earth Pointing

Advanced Baseline Imager (ABI)



Exelis

Geostationary Lightning Mapper (GLM)



Lockheed Martin Space Technology Advanced Research and Development Laboratories

In-Situ

Space Environment in-Situ Sensor Suite (SEISS)

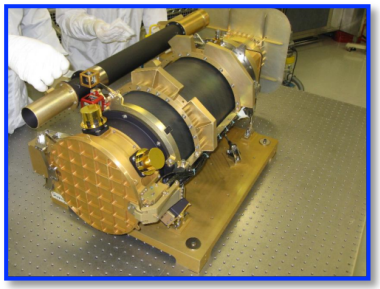
Assurance Technology Corp.

Magnetometer

Macintyre Electronic Design Associates and ATK

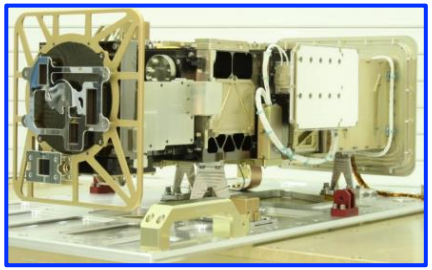
Sun Pointing

Solar Ultra-Violet Imager (SUVI)



Lockheed Martin Space Technology Advanced Research and Development Laboratories

Extreme UV/X-Ray Irradiance Sensors (EXIS)

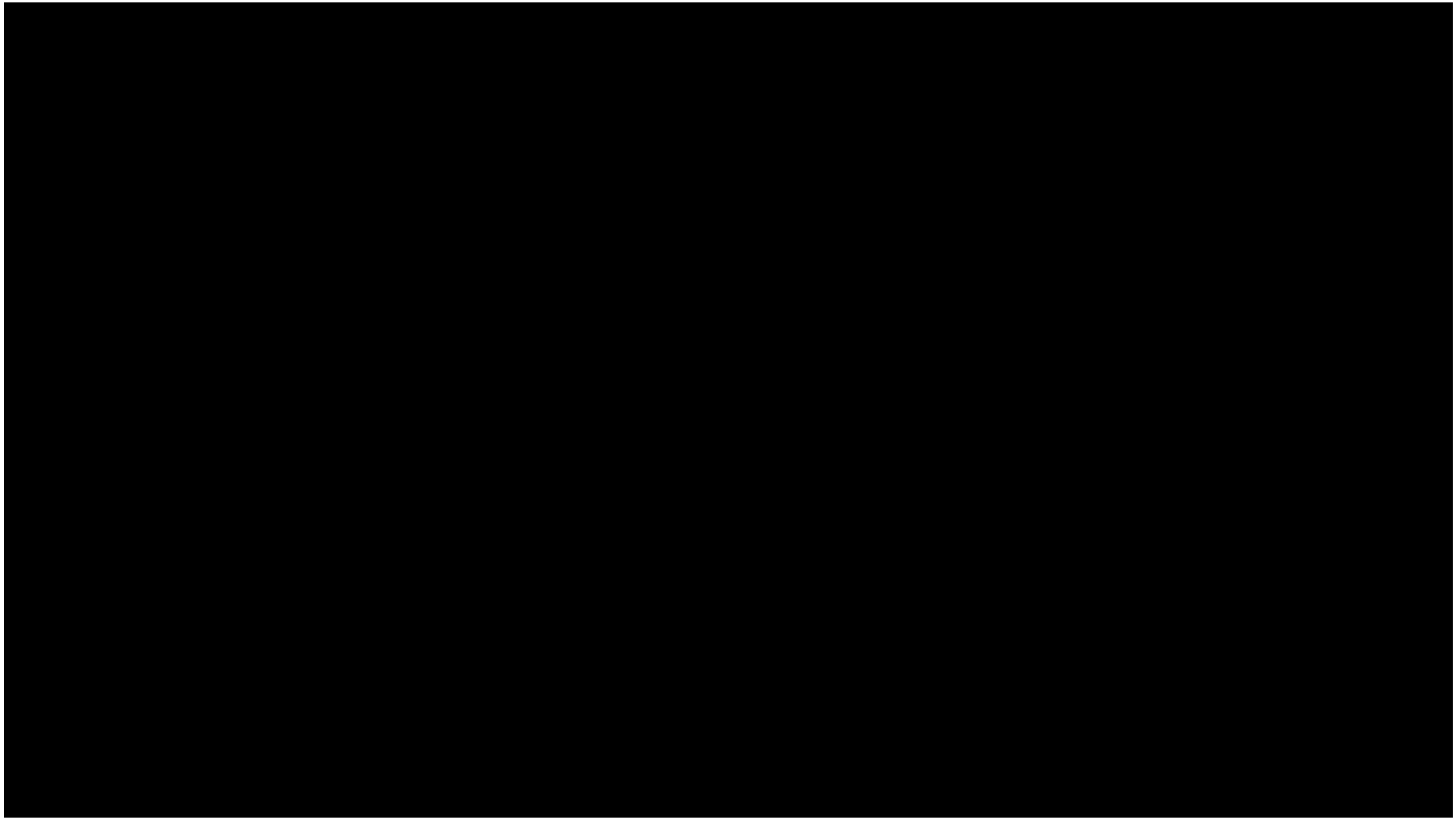


University of Colorado Laboratory for Atmospheric and Space Physics

Preparing Users for the ABI on GOES-R: Tim Schmit – Tu, Jan. 6, 4:15 PM

Preparing Users for the GLM on GOES-R: Steve Goodman – Tu, Jan. 6, 4:30 PM

GOES-R Spacecraft Module Mate

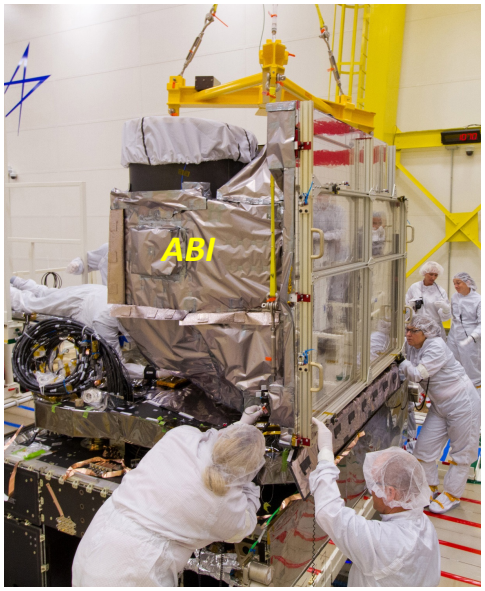


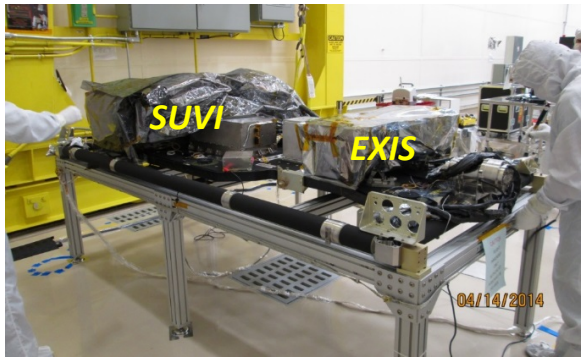
GOES-R Flight Segment Progress

Completed "mate" of spacecraft system and core modules

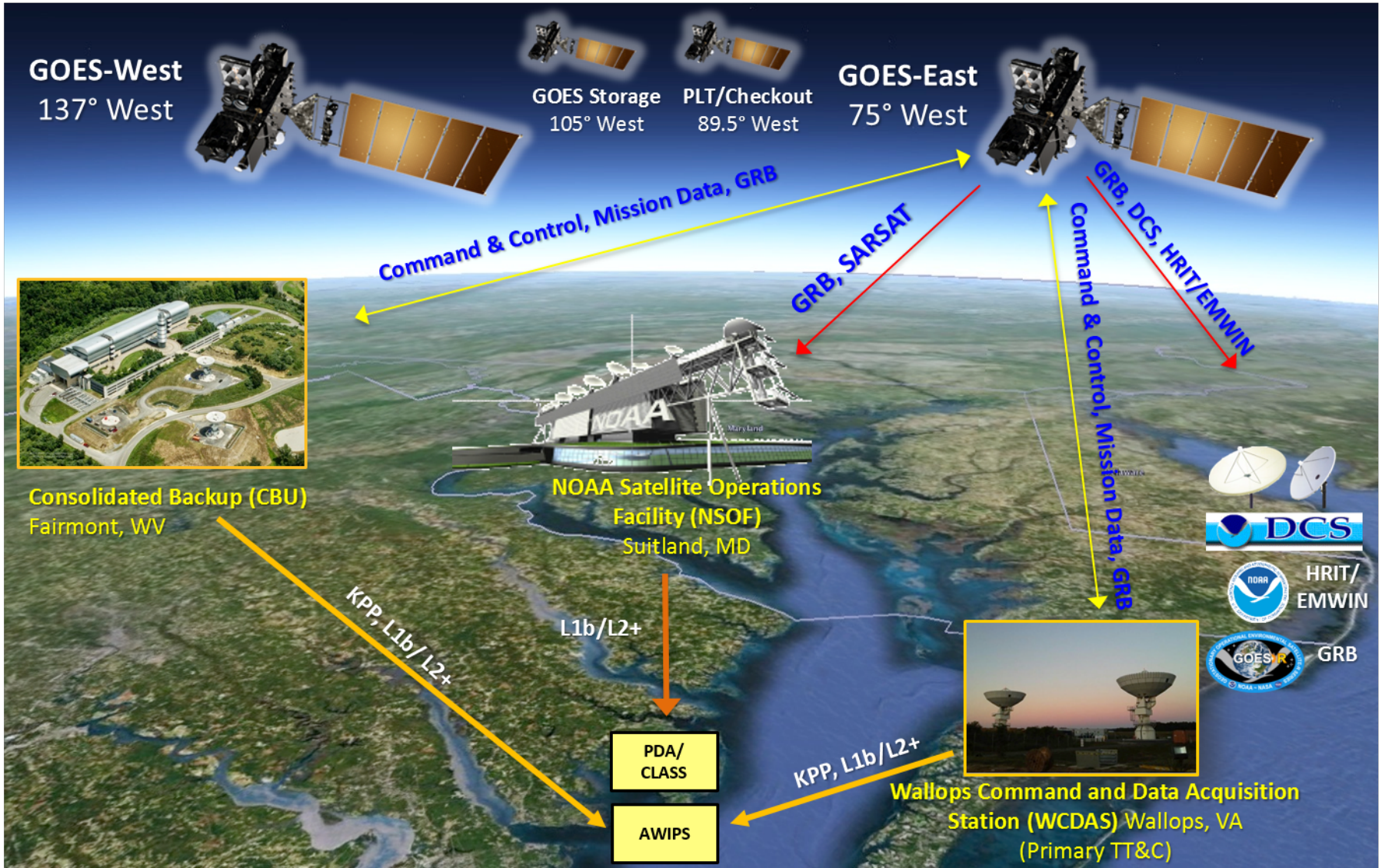
Solar Array delivered

All GOES-R instruments are integrated with spacecraft



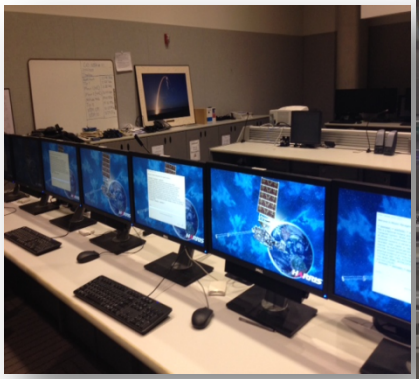


GOES-R Architecture Overview



GOES-R Ground Segment Progress

Release Mission Management Upgrade installation at NSOF

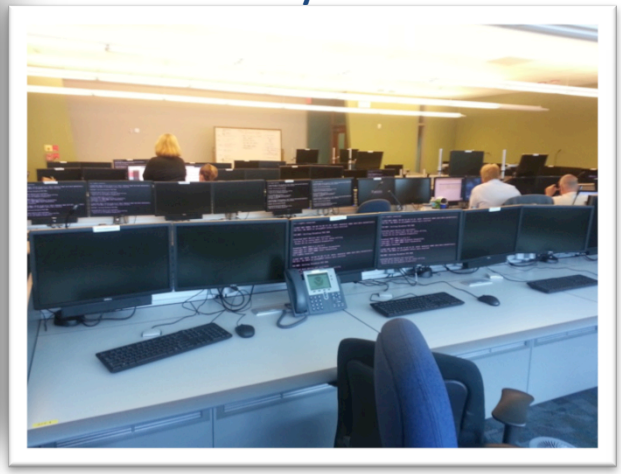


W-1 antenna at WCDAS

Enterprise Infrastructure installation at CBU

N-1 antenna at NSOF

Mission Management Flight Ready at CBU



CBU antenna stations

GOES-R Series Products

L1b Products →

L2+ Products are remainder outside of oval

Radiances*	Cloud and Moisture Imagery (KPP)
Solar Imagery: EUV*	Rainfall Rate / QPE
Energetic Heavy Ions*	Legacy Vertical Moisture Profile
Magnetospheric Electrons and Protons: Low Energy*	Legacy Vertical Temperature Profile
Magnetospheric Electrons and Protons: Medium and High Energy*	Derived Stability Indices
Solar and Galactic Protons*	Total Precipitable Water
Geomagnetic Field*	Clear Sky Masks
Solar Flux: EUV*	Downward Shortwave Rad.: Surface
Solar Flux: X-Ray*	Fire / Hot Spot Characterization
Lightning Det: Events, Groups, Flashes*	Land Surface (Skin) Temperature
Aerosol Detection (including Smoke & Dust)	Sea Surface Temperature (skin)
Aerosol Optical Depth	Reflected Shortwave Rad.: TOA
Volcanic Ash: Detection & Height	Snow Cover
Cloud Optical Depth	Derived Motion Winds
Cloud Particle Size Distribution	Hurricane Intensity
Cloud Top Phase	Cloud Top Pressure
Cloud Top Height	Cloud Top Temperature

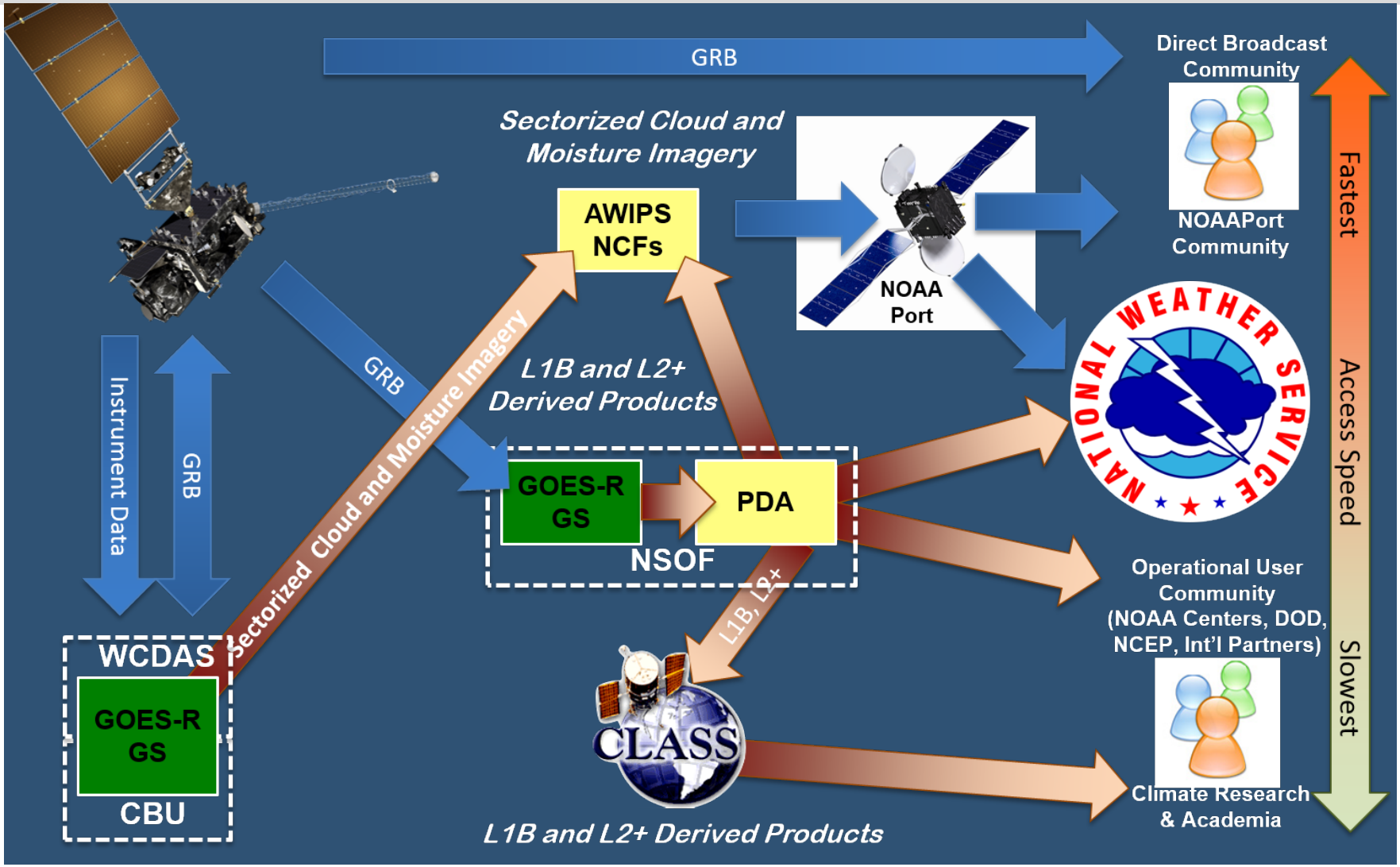
← Key Performance Parameter (KPP)

Key

ABI	GLM
SEISS	EXIS
SUVI	Magnetometer

*** Included in GRB**

GOES-R Data Distribution



GOES-R Satellite Proving Ground

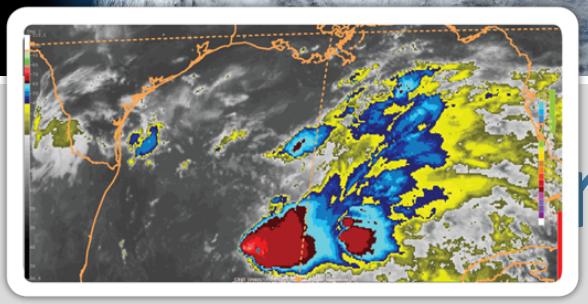
Making GOES-R test products available to forecasters, GOES-R level 2 products for research

- Satellite liaisons (subject matter experts) at NWS National Centers
- Develop training for users
- Several GOES-R level 2 products are demonstrated in the GOES-R Proving Ground
- Examples can be found on the PG blogs and through the website www.goes-r.gov.
- International projects
- Visiting Scientist Program

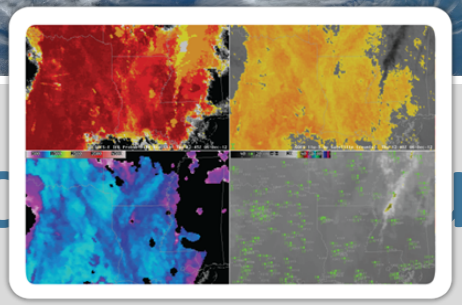
NOAA Hazardous Weather Testbed (HWT)

CHUVA PROJECT

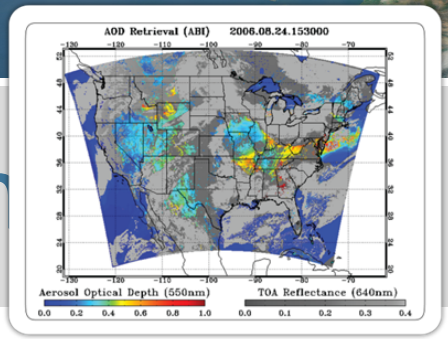
ESSL Testbed 2014



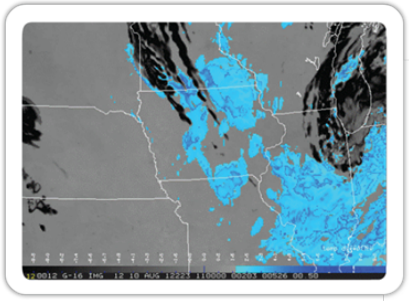
Aviation Weather Center (AWC) – Kansas City, MO
IR Imagery of Oceanic Storms



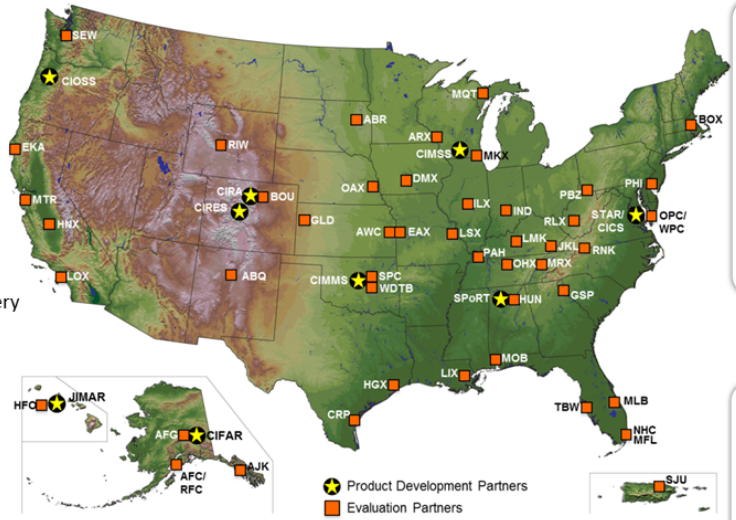
Cooperative Institute for Meteorological Satellite Studies (CIMSS)/Center for Satellite Applications and Research (STAR) – Madison, WI
Fog/Low Stratus Product

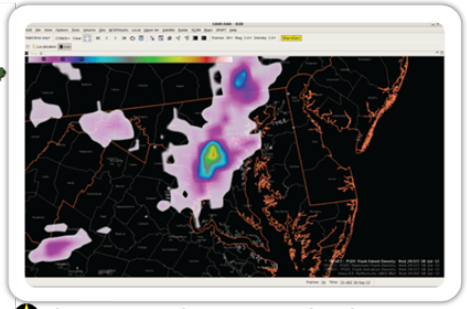


STAR/University of Maryland Baltimore County (UMBC)– College Park, MD
Aerosol Optical Depth

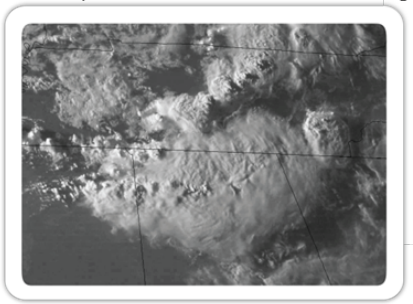


Cooperative Institute for Research in the Atmosphere (CIRA)/STAR – Ft. Collins, CO
ABI Synthetic Low Cloud Enhancement Imagery

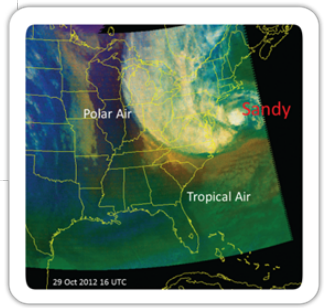




Short-term Prediction Research and Transition Center (SPoRT)/NASA – Huntsville, AL
GLM Lightning Density



Storm Prediction Center (SPC) – Norman, OK
Severe Storms 1-Min Visible Imagery of Overshooting Tops



National Hurricane Center (NHC) – Miami, FL
RGB Air Mass for Hurricane Sandy

GOES-14 SRSOR 1-min Super Rapid Scan Experiment

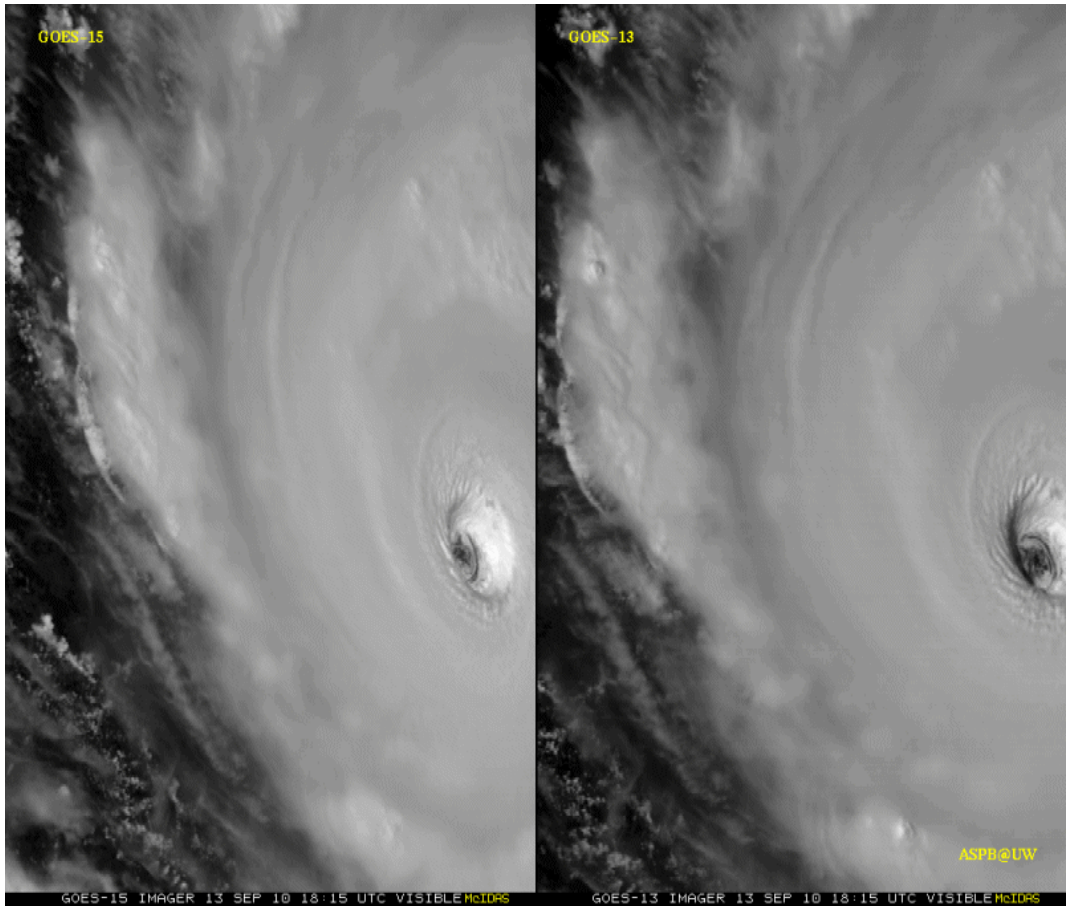
GOES-R Demonstrations at NOAA Testbeds and Proving Grounds
(http://cimss.ssec.wisc.edu/goes/srsor2014/GOES-14_SRSOR.html)

2014 Dates:

- May 8–22, 2014
- August 14–28, 2014

SRSOR 2015 demonstrations approved:

- May 8–June 2, 2015
- August 10–22, 2015

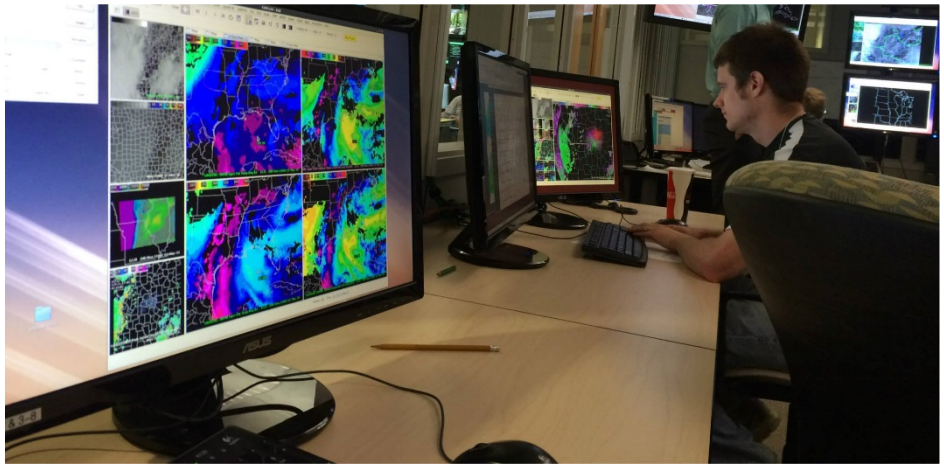


1-min 30-min

Hurricane Igor, September 2010. Visible data from the GOES-15 NOAA Science Test, lead by Hillger and Schmit

Broadcast Meteorology Collaboration

- Outreach efforts to introduce GOES-R products to forecasters and accelerate user readiness for the advanced capabilities of GOES-R.
- GOES-R Funded four broadcast meteorologists (with NWS forecasters) to attend the Hazardous Weather Testbed in Norman, OK this past May.
- Proposal submitted to AMS Committee on Broadcast Meteorology with draft agenda for a "Short Course on GOES-R for broadcast meteorologists" at 2015 conference.

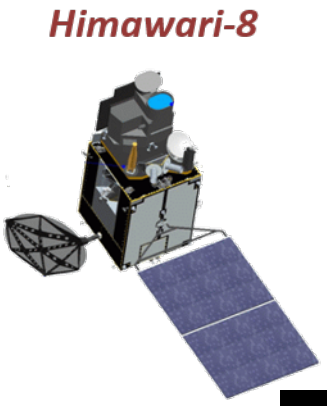


GOES-R Hazardous Weather Testbed 2014 Spring Experiment. Courtesy of Erica Grow WUSA 9

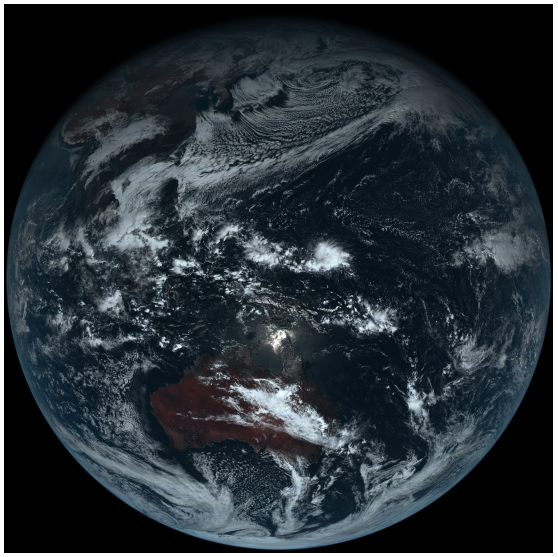
Satellite Liaison Chad Gravelle presented "Capabilities of The Next-Generation Geostationary Environmental Satellite System for Operational Meteorology" at the 2014 AMS Broadcasters conference.

International Collaboration

- Japan Meteorological Agency (JMA)
  - Information exchange and collaborative research on volcanic ash and cloud analysis science
  - Algorithm Working Group team member visits
  - Access to full resolution HIMAWARI imagery for PG demonstrations



- European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)
  - Collaboration in research and applications through the Convection Working Group and the Satellite Application Facilities
  - Development of training materials through the World Meteorological Organization (WMO) Virtual Laboratory and CGMS



Himawari 8 True Color Composite from December 18, 2014

Training and User Education

Online Training Modules

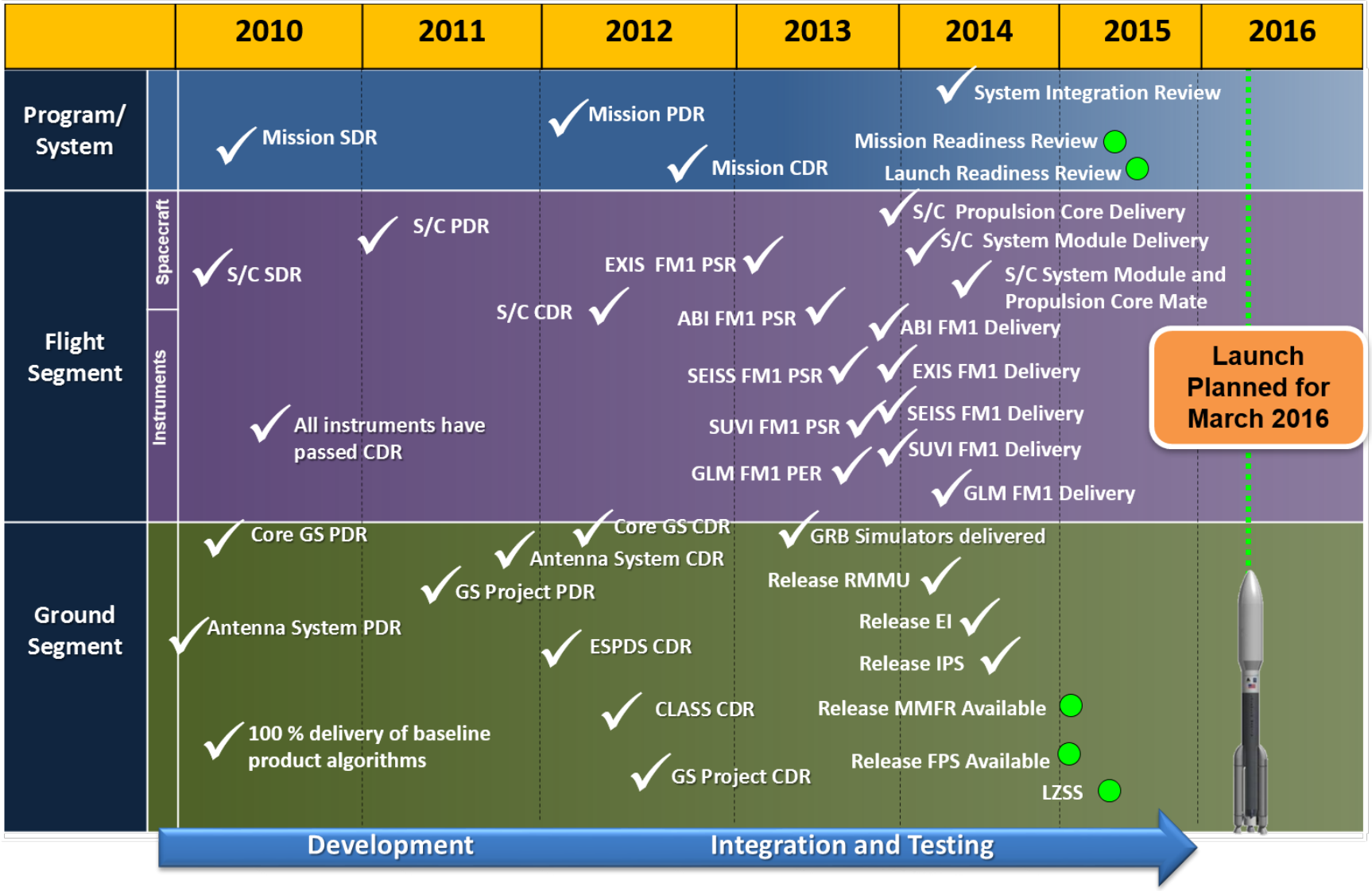
- GOES-R GLM: Introduction to the Geostationary Lightning Mapper (COMET)
- How Satellite Observations Impact NWP (COMET)
- GOES-R ABI: Next Generation Satellite Imaging (COMET)
- GOES-R: Benefits of Next-Generation Environmental Monitoring (COMET)
- Satellite Hydrology and Meteorology for Forecasters (SHyMet)
- SPoRT product training modules
- VISIT Training Resources
- Commerce Learning Center

Printed Materials

- ABI Bands Quick Information Guides
- GOES-R Fact Sheets (18)
- User Readiness Plan
- GRB Downlink Specifications and Product Users Guide
- Proving Ground Demonstration Final Reports and Annual Reports

MetEd Resources at the Ready as Users Prepare for GOES-R+: Wendy Abshire – Wed, Jan. 7, 9:00 AM

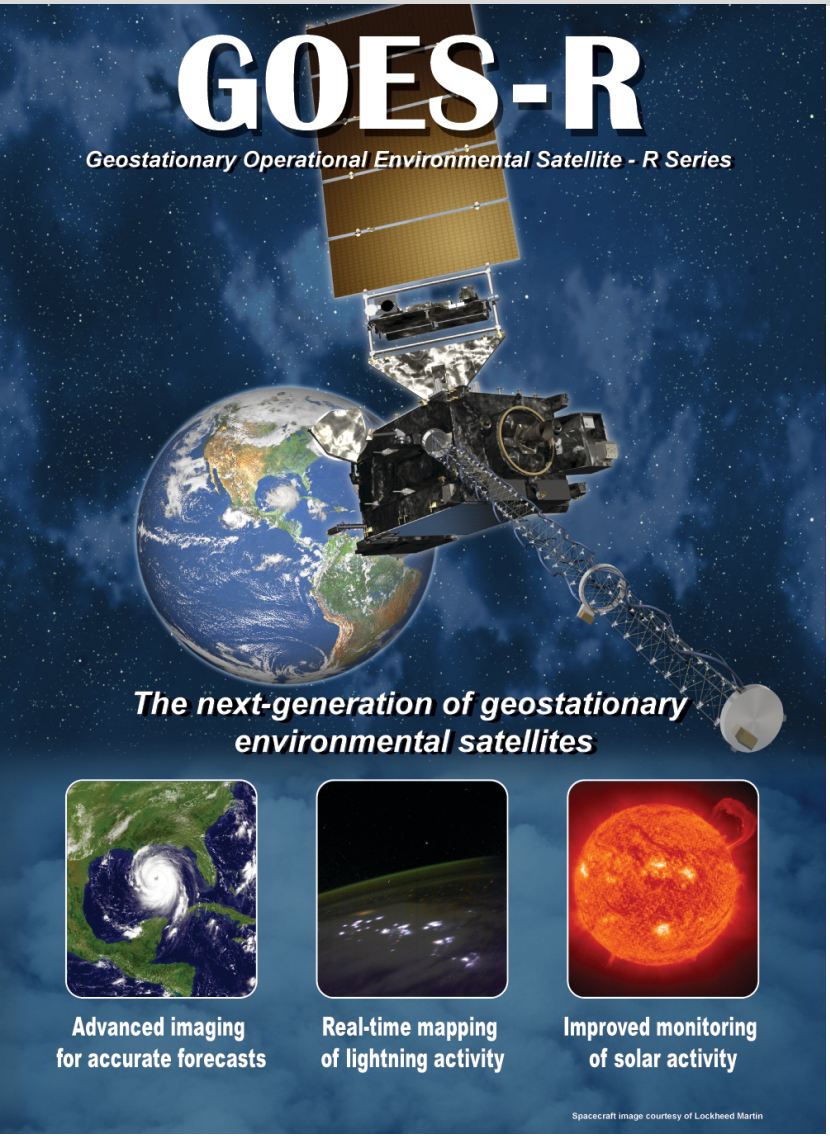
GOES-R Milestones




GOES-R
launches in
March
2016!

2015 NOAA Satellite Conference

Thank You!



For more information visit
www.goes-r.gov

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